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REMARKS

Claims 1-14, 16-30, 32-45, and 47-57 are presented. Claims 58-60 have been cancelled.

Claims 1-14, 16-30, 32-45, and 47-60 have been rejected under 35 U.S.C. 103(a) as being unpatentable over WO 96/41917 ("WO '917") in view of Lindahl.

Applicants traverse this rejection, and particularly the Examiner's analysis of the WO '917 and Lindahl references, both individually and in combination. Applicants believe that the Examiner's interpretation of these references is incorrect, as are his conclusions based thereon.

WO '917 relates to the use of MgO as the sole alkaline source in a pulp bleaching process. The pending claims relate to a different alkaline source, namely, magnesium hydroxide.

WO '917 relates only to the use of MgO in the form of solid particles of varying size. Contrarily, as expressed in the claims of the present invention, magnesium hydroxide is added in the form of an aqueous slurry. For this reason as well, WO '917 does not teach or suggest the claimed invention.

WO '917 also clearly and specifically states that "To achieve maximum efficiency (*this means achieving the maximum target properties such as brightness*), the MgO particles must be added to the pulp in the form of a powder or slurry prepared in situ. Preferably the MgO (*in particle form*) is added to the pulp simultaneously with the peroxide or prior to the addition of peroxide (emphasis added)." Contrarily, in the claims of the present invention, the aqueous slurry of mechanical wood pulp, the aqueous bleaching mixture consisting essentially of water and hydrogen peroxide, and the aqueous magnesium hydroxide slurry are combined. Neither the aqueous slurry of mechanical wood pulp or the aqueous bleaching mixture is combined with magnesium hydroxide in a powdery condition as required by the teachings of WO '917. The WO

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'917 process is totally different than the process set forth in claims 1-14, 16-30, 32-45, and 47-60 of the present invention.

WO '917 teaches away from the use of magnesium hydroxide and seeks to prevent its formation. To conclude otherwise is to ignore the express teachings of WO '917.

WO '917 discloses a "maximum target ISO Brightness of 65". Claims 1-14, 16-30, 32-45, and 47-60, on the other hand, are directed to an ISO brightness of either (a) up to about 75%, or (b) more than about 65 %. Neither of these ISO brightness levels are achieved by the method of WO '917 according to their own express statements regarding ISO Brightness.

WO '917 states that "...commercial usage of magnesium oxide as a sole alkaline source in bleaching of wood pulp may be achieved by employing MgO particles...of between 20 to 60 m²/g.... By using such parameter(s)...a maximum target of ISO brightness of 65 (*can be achieved*)...." The data in FIG. 3 of WO '917 shows that ISO brightnesses of up to about 60 to 61+ can be achieved at surface areas of between 35 m²/g and 142 m²/g. ISO brightness of less than 60 will result, according to the FIG. 3 data, if the surface area of the MgO particles is less than 35 m²/g or greater than 142 m²/g.

In contradistinction to the teachings of WO '917, claims 1-14, 16-30, 32-45, and 47-60 recite a BET surface area of about 7 to about 15 m²/g for magnesium hydroxide. This BET surface area is clearly outside the range described in WO '917 to achieve an ISO brightness value of only about 60 to 61+ which is well below the claimed range of the present invention. Unexpectedly, and conversely to the teachings of WO '917, when the claimed BET surface area of about 7 to about 15 m²/g is employed for magnesium hydroxide, an ISO brightness of (a) up to about 75%, or (b) more than about 65 %. will result for a bleached mechanical wood pulp produced according to the claimed bleaching process.

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In summary, in spite of the fact that the claimed invention does not follow the bleaching technique expressly prescribed by WO '917 to achieve maximum efficiency, a significantly higher ISO brightness can be achieved using magnesium hydroxide as the sole alkaline source. This is because a bleaching pulp mixture formation process is employed by Applicants which is totally different than the method propounded by WO '917. Applicants interpretation and conclusions stated above with respect to the nature and scope of the actual teachings of the WO '917 reference are fully supported by the enclosed Declaration Traversing Cited References (37 C.F.R. 1.132).

The Examiner has also cited Lindahl for the proposition that $\text{Mg}(\text{OH})_2$ is being used as an alkali source. In fact, Lindahl discloses magnesium oxide, magnesium hydroxide, magnesium carbonate, magnesium chloride, magnesium nitrate, magnesium acetate, magnesium sulfate, etc., none of which function as an alkali source in the method and system of Lindahl. All of these magnesium compounds may work in Lindahl, but they do not effectively work as alkali sources in the claimed invention. The amount of magnesium hydroxide in the bleaching pulp mixture in claims 1-14, 16-30, 32-45, and 47-60 is at least about 0.5 wt %, based on pulp dry mass. This is clearly not the case but is instead an incorrect interpretation of Lindahl. In Lindahl, $\text{Mg}(\text{OH})_2$ is not being employed as an alkali source but instead is being used as a stabilizer. This is clearly evidenced by the fact that the amounts of $\text{Mg}(\text{OH})_2$ actually being employed in Lindahl (see column 3, lines 4 thru 15) is only 0.05% to 0.1%.

In order to be effective as an alkali source in bleaching of mechanical, as claimed by Applicants, the amount of $\text{Mg}(\text{OH})_2$ must be significantly higher than disclosed by Lindahl. Contrarily, adding insufficient $\text{Mg}(\text{OH})_2$ to the peroxide for bleaching purposes will result in a substantially reduced level of brightness. Applicants are adding $\text{Mg}(\text{OH})_2$ as an alkali source at levels 10 to 100 times greater because the HOOH used in bleaching the mechanical pulp demands it. For purposes of illustration, claim 14 describes that wherein the initial ratio

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of magnesium hydroxide to hydrogen peroxide in said bleaching mixture is about 25 parts to about 75 parts of magnesium hydroxide to about 100 parts of hydrogen peroxide, based on a $\text{Mg}(\text{OH})_2$ chemical equivalence. This level of $\text{Mg}(\text{OH})_2$ addition is done for reasons such as to optimize brightness for maximizing the brightness of the pulp.

Lindahl also teaches providing a slurry of mechanical pulp, and combining the mechanical pulp with a spent hydrogen peroxide bleaching agent and chelating agent. The actual bleaching pH in Lindahl is 10-11, not 7-9. The pending claims are directed to a bleaching pulp mixture having a pH of from about 5.0 to 8.5. The pH which the Examiner refers to in the Office Action is the pH of the spent liquor. The pH values set forth in the claims of the present invention are for the bleaching pulp mixture. In Lindahl, column 3, line 66, the pH after the addition to the pulp is disclosed as 9.8 to 10.8.

The Examiner states that it is obvious to use the bleach conditions of Lindahl as the peroxide bleach conditions. Lindahl's conditions only apply to a system that utilizes caustic soda and sodium silicate. They do not apply to the process of the present invention. Instead, the bleach conditions of claims 1-14, 16-30, 32-45, and 47-60 apply to a system that uses magnesium hydroxide in the absence of caustic soda and sodium silicate. Applicant's interpretation and conclusions stated above with respect to the nature and scope of the actual teachings of the Lindahl reference are fully supported by the enclosed Declaration Traversing Cited References (37 C.F.R. 1.132).

Applicants traverse the above rejection based on the above-cited references both individually and in combination for the reasons set forth above. Furthermore, absent some motivation, incentive, or suggestion in the prior art supporting the modification of a reference, obviousness cannot be established by modifying the reference for purposes of producing the claimed invention. To make an obviousness rejection, the Examiner must be able to point to a teaching in the reference that suggests the modification asserted by the Examiner. Absent such a

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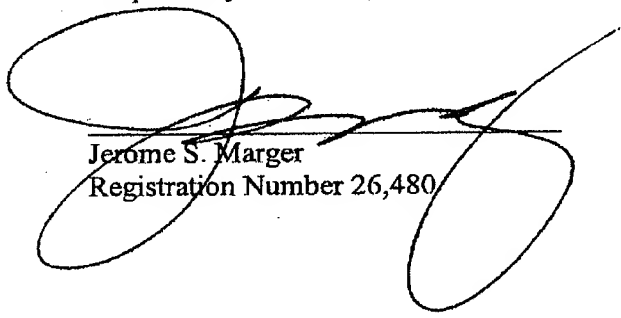
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suggestion, the Examiner has impermissibly used applicant's teachings to examine the prior art for the claimed elements.

In summary, for the reasons set forth above, the applicable cited references, individually or in combination, do not teach or suggest the process set forth in pending claims 1-14, 16-30, 32-45, 47-60 of the above-captioned invention.

Accordingly, this application is now in condition for allowance, and the Examiner is requested to pass this application to issue forthwith. If any matters are later deemed unresolved by the Examiner, he is encouraged to call the Attorney for Applicants to discuss same.

Respectfully submitted,



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